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7. BRACHIOPODA

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I. TITLES

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II.—SUBJECT INDEX

Reference to the "Titles" is by the name(s) of the Author(s).

Text-books. — Invertebrate Paleont., Easton ; General, Ehrenberg ; Termier, H. & G., Müller.

General.—Report on Petroleum exploration in Britain, Falcon & Kent ; Russian Treatise on Invertebrate Paleontology, Sarycheva et al., Fossil brachs, in handbook, Roger. Population studies of *Crania* Rowell.

Catalogues.—Type specimens of Geol. Survey, Canada, Bolton, Type and little known species of Morocco, Colo & Petiot.

Classification.—Proposed classification for Pentameracea Rzhonsnitskaya (2); Productoidea, Muir-Wood & Cooper; Proposed new orders Termier.

Biography.—Life of W. H. Dall, Woodring.

Biometrical analysis.—Relative growth characteristics of Lr. Carb species Parkinson; Silurian U.S.A. Amsden; Carboniferous Germany Gräf.

Nomenclature.—Type species of *Norella* Bittner, 1890, Ager; correction of brachiopod names, Cooper; type species of *Strophalosia*, Muir-Wood.

Shell structure.—Productoidea, Muir-Wood & Cooper.

Techniques.—Preparation by dissection and acid development, Muir-Wood & Cooper.

Terminology.—New terms for Productoidea etc. Muir-Wood & Cooper.

STRUCTURE AND ANATOMY

Anatomy and Physiology. — Histology and histological sections through gut of *Crania anomala*. Histochemistry of gut of *Crania*, Chuang; Anatomy of *T. caput-serpentis*, Haro; metamorphosis and developmental stages of larva of *P. sanguinolenta*, Mano; oxygen equilibrium of respiratory pigment, hemerythrin, Manwell; mechanism of ciliary food-collecting and gut functions of Recent brachiopods, Morton; life history and larval development of *Tegulorhynchia*, Percival; development and anatomy of *Crania*, Rowell; feeding mechanism of spire-bearing fossil forms, Rudwick; functional use and mode of growth of spines in spiriferidae Vandercamman; ring attachment in young Productoidea Muir-Wood & Cooper; possible feeding habits in productids, Muir-Wood & Cooper.

Serial Sections.—Silurian, U.S.S.R., Alekseeva (2), Nikiforova; Sapelnikov; Canada Crickmay; Harker in Harker & Thorsteinsson; Britain Owen.

DISTRIBUTION

Cambrian.—W. Africa (Lr.), Poulsen; S. Korea (Ur.) Kobayashi and (1); Wyoming, U.S.A. (Ur.) Lochman & Hu; Argentina (Mid.) Poulsen (1).

Ordovician.—U.S.S.R. (Lr.), Andreeva; Czechoslovakia (Ur.) Havlíček; Britain (Caradoc Series) Dean; Dean (1), Ireland, Wright; French Sahara (Lr.) Legrand, Poueyto & Rouaix; South Korea, Kobayashi; Canada, Colquhoun; U.S.A. (Mid.) Pestana.

Silurian.—U.S.S.R., Alekseeva (1); Alekseeva (2); (Lr.) Asatkin; Nikiforova; (Wenlock) Sapelnikov; Czechoslovakia, Havlíček; Britain, Lawson; Canada, (Ur.) Boucot (2); (Mid.) Norford; U.S.A. Amsden, Amsden (1); Amsden & Huffman; W. Texas, Wilson & Majewske; Australia, Philip.

Devonian.—U.S.S.R., Bublikhenko, Hecker; (Lr.) Khodalevich (1); Miroshnikov, Kravtsov, & Shcheglova; (Mid.) Tjzheva; Khodalevich *et al.* (Urals); Yana; (Ur.) Poyarkov; (Mid.) Rozman; (Mid.)

Rzhonsnitskaya & (1), (Ur.) Sidiachenko. Czechoslovakia (Mid.) Havlíček (1); Germany (Mid.) Schmidt; Belgium (Lr.) Boucot; Spain (Ur.) Sitter & Zwart; Canada (Mid.) Crickmay (1); (Lr.) Boucot (1) & (3); (Ur.) Pedder; U.S.A. Sutton; (Lr.) Boucot & Arndt; (Lr. Mid. & Ur.) Muir-Wood & Cooper; South America Bürgi; Australia (Lr.) Philip.

Carboniferous.—U.S.S.R. (Lr.) Balashova; (Lr. & Ur.) Benediktova; (Lr.) Dedeev & Lapina; (Ur.) Volgin; (Ur.) Volgin (1); Czechoslovakia (Lr.) Zakowa; Poland (Lr.) Zakowa (1); (Lr.) Gunia & Gorecka; Germany Gräf; Belgium (Lr.) Conil; Eire (Lr.) George; (Lr.) Caldwell; U.S.A. (Lr.) Huffman & Starke; (Pennsylvanian) Matthews; Hoare & Burgess; (Lr.) Sass; (Lr. Penn.) Sadlick; (Lr. Penn.-Ur.) Williams; (Lr. Penn.) Weller; South America (Ur.) Bürgi; Australia (Lr.) Maxwell.

Permian.—U.S.S.R. Sluisareva; Ustritzkii; (Lr.) Volgin & (1); (Ur.) Zavadorsky; Canada (Arctic Regions) Harker in Harker & Thorsteinsson; U.S.A. Coogan; (Lr.) Stehli; Japan (Mid.) Nakamura; Australia Campbell.

Palaeozoic.—U.S.S.R. Gholubkov; (Ur.) Miloradovich; Sokolskaja; U.S.A. Wilson & Majewske.

Triassic.—Yugoslavia Pantič; Italy Desio, Rossi Rouchetti & Vignano; Spain Virgili; France (Ur.) Fuse; Europe Ager.

Jurassic. — U.S.S.R., Makridin; Poland (Ur.) Malinowska; Yugoslavia Sudic; (Lias) Italy, Pozzi; Europe (General) Ager; France (Lr.) Fuse; (Mid.) Theobald; England (Lr.) Hallam; Arabia, Hudson & Chatton; India Shani & Bhatnagar.

Cretaceous.—U.S.S.R., (Georgia) Popkhadze; (Lr. N. Caucasus) Smirnova; Italy (Lr.) Stramondo; (Ur.) Germany Steinich; England (Lr.) Owen; (Ur. Chalk) Sahni; Arabia, Hudson & Chatton; Australia (Lr.) Elliott (1).

Tertiary.—U.S.S.R. (Georgia), Popkhadze; Italy (Lr.) Dieni & Omenetto; Portugal (Pliocene) Zbyszewski; France (Eocene) Balavoine; Britain (Eocene) Curry; Arabia & Syria, Elliott; U.S.A. (Pliocene) Hertlein & Grant; (Pleistocene) Kanakoff & Emerson; New Zealand, Allan.

Recent.—General Mano; Manwell; Beauchamp; Rowell; Morton; Britain Atkins; Atkins (1), (2); Chuang; Spain & Azores Odhneez; Spain Haro; New Zealand Percival.

III.—SYSTEMATIC INDEX

Note.—The classification used here is according to H. M. Muir-Wood, 1955, with minor later amendments. In view of the varied state of revision of the different groups and to avoid certain inconsistencies, no subdivision is attempted here below the level of superfamily.

Generic and family names are arranged in alphabetic order within each superfamily.

References to the "Titles" is by the name(s) of the Author(s).

†Denotes genus extinct.

CLASS INARTICULATA

Order ATREMATA

OBOLACEA

†*Dicellomus ambliia* p. 819, figd., **Lochman & Hu** ;
? sp. ind. p. 5, figd., **Poulsen** (1).

†*Dinobolus* (?) *ambiguidensis* sp. nov., p. 799, figd.,
Lower Ordovician, French Sahara, **Legrand, Poueyto
& Rouaix** ; cf. *conradi* p. 242, figd., Middle Silurian,
Canada, **Norford**.

†*Dysoristius lochmanae* p. 820, figd., **Lochman & Hu**.

†*Lingulella kayseri* p. 338, figd., **Kobayashi** (1) ;
modesta p. 820, figd., **Lochman & Hu** ; *tomkolensis*
p. 226, figd., **Kobayashi** ; sp. p. 810, figd., **Lochman &
Hu**.

†*Lingulepis shamoiformis* sp. nov. p. 338, *L.* (?) sp.
p. 339, both figd. Ur. Cambrian, Korea., **Kobayashi**
(1).

†*Obolus taianensis* p. 338, figd., **Kobayashi** (1).

LINGULACEA

Lingula arctica p. 49, figd., **Harker** ; *beanii* p. 29.,
Lower Lias, Dorset and Glamorgan, **Hallam** ; *mytilo-*
loides p. 18, figd., **Gräf**.

†*Lingulaema* (?) sp. p. 871, figd., **Pestana**.

Glottidia albida p. 18, Pleistocene, California,
Kanakoff & Emerson ; *albida* p. 89, figd., **Hertlein &
Grant**.

†*Glyptoglossella* (type species *Glyptoglossa cavellosa*
Cooper, 1957) substituted for *Glyptoglossa* **Cooper**, 1956
preoc. **Brenske**, 1895, **Cooper**.

†*Pachyglossella* (type species, *Pachyglossa dorsi-*
conveza **Cooper**, 1956) substituted for *Pachyglossa*
preoc. **Hodgson**, 1843., **Cooper**.

Order NEOTREMATA

PATERINACEA

†*Dictyonina* sp. p. 820, figd., **Lochman & Hu**..

Order Kutorginida proposed for Paterinacea,
Kutorginacea p. 181, 182, **Sarycheva**, et al.

†*Micromitra modesta* p. 820, figd., **Lochman & Hu**.

SIPHONOTRETACEA

†*Botsfordia paucigranulata* sp. nov. p. 8, figd.,
Lower Cambrian, West Africa, **Poulsen**.

Order Siphonotretida proposed for Obolellacea,
Siphonotretacea, p. 180, **Sarycheva** et al.

ACROTRETACEA

†*Acrothele sougyi*, *epinulosa* spp. nov. p. 9, figd.,
Lower Cambrian, West Africa, **Poulsen**.

†*Linnaressonella girtyi* p. 814, figd., **Lochman & Hu**.

DISCINACEA

Disciniscia holdeni p. 29, Lower Lias, Dorset and
Glamorgan, **Hallam**.

†*Orbiculoidea* sp. p. 49, figd., **Harker**.

Pelagodiscus atlanticus p. 403, figd., Recent, N.
Spain and Azores, **Odhner**.

CRANIACEA

†*Angarella* gen. nov. p. 486, type species : *A. jawo-*
rowskii sp. nov. p. 488, Lower Silurian, Siberian
Platform, U.S.S.R., **Asatkin**.

Crania anomala p. 35, Recent., **Rowell** ; *anomala*
p. 9, figd., histology, **Chuang**.

Pholidopsidae fam. nov. for *Pholidops*, *Lingulapholis*
p. 177, **Gorjansky** in **Sarycheva**, et al.

CLASS ARTICULATA

Suborder ORTHOIDEA

ORTHACEA

†*Altorthis* gen. nov. p. 288, type species *A. kinder-*
lensis sp. nov. p. 289, figd., Ordovician, U.S.S.R.,
Andreieva.

†*Aphecothis orientalis* sp. nov. p. 227, *A.* sp. p. 228,
both figd., Lower Ordovician, Korea, **Kobayashi**.

†*Billingsella* sp. p. 810, figd., cf. *B.* sp. p. 818, figd.,
Lochman & Hu.

†*Dolerorthis duftonensis* p. 168, **Dean** ; sp. p. 293,
figd., **Boucot**.

†*Eoorthis remnicha* p. 810, figd., **Lochman & Hu** ;
(?) sp. indet. p. 227, figd., **Kobayashi**.

†cf. *Ocnorthis cooperi* p. 810, p. 815, figd., **Loch-**
man & Hu.

Order Orthida proposed for Orthacea, Rhipido-
mellacea, Enteleteacea, Clitambonitacea p. 183,
Sarycheva et al.

†*Otusia sandbergi* p. 810, figd., **Lochman & Hu**.

†*Ptychopleurella arthuri* sp. nov. p. 871, figd.,
Pestana.

Tuvaellidae fam. nov. for *Tuvaella* p. 190, **Alichova**
in **Sarycheva**, et al.

Suborder DALMANELLOIDEA

DALMANELLACEA

†*Bancroftina typa*, cf. *robusta* p. 168, **Dean**.

†*Dalmanella horderiyeensis*, *indica*, *lepta* p. 168,
Dean.

†*Elsaella* nom. nov. for *Bekkerella* **Rosenstein**, 1943,
p. 192, **Alichova** in **Sarycheva**, et al.

†*Enteletes carnicus* p. 31, *ochlerti* p. 32 both figd.,
Volgin (1) ; cf. *pentameroides* p. 23, **Gholubkov**.

†*Heterorthis alternata* p. 168, **Dean**.

†*Isorthis arcuaria* p. 82, Silurian, U.S.A., **Amsden**.

†*Isorthis fornicatimurcata* p. 296, figd., **Boucot** ;
orbicularis p. 5, figd., **Boucot** (2).

†*Orthotichia ovata* p. 30, figd., **Volgin** (1).

†*Parmorthis brownsportensis* p. 78, Silurian, U.S.A., Amsden.

†*Pionodema* aff. *lunata* p. 298, figd., Boucot.

†*Platyorthis verneuili* p. 294, figd., Boucot.

†*Proschizophoria torifera* p. 299, figd., Boucot; P. sp. figd., pl. 68, Boucot (1).

†*Rhipidomelloides musculosa solaris* p. 46, figd., Boucot & Arndt.

†*Salopina* gen. nov. p. 3 type species: *Orthis lunata*, 1839, figd., Ur. Silurian, Boucot (2).

†*Soudleyella* cf. *avelinei* p. 167, Dean.

†*Schizophoria resupinata* p. 423, Parkinson; *resupinata* p. 147, figd., Dedeev & Lapina; *striatula* p. 707, Biernat.

†*Tropidoleptus* sp. figd. pl. 68, Boucot (1).

Suborder CLITAMBONITOIDEA

CLITAMBONITACEA

†*Pomatotrema* (?) sp. p. 228, Kobayashi.

Suborder SYNTROPHIOIDEA

SYNTROPHIACEA

Alimbellidae fam. nov. for *Alimbella*, *Medessia*, p. 292, Lr. Ordovician, U.S.S.R., Andreeva.

†*Alimbella* gen. nov. p. 292, type species: *A. armata* sp. nov. p. 293, figd., Lr. Ordovician, U.S.S.R., Andreeva.

†*Clarkella vulgaris* p. 228, figd., Kobayashi.

†*Medessia* gen. nov. p. 295, type species: *M. uralica* sp. nov. p. 296, figd., Lr. Ordovician, U.S.S.R., Andreeva.

†*Palaeostrophia orthia* p. 339, figd., Kobayashi (1).

Suborder PENTAMEROIDEA

PENTAMERACEA

Anastrophidae fam. nov. for *Anastrophia* p. 202, Sarycheva, et al.

Antirhynchonellidae fam. nov. for *Antirhynchonella*, p. 205, Nikiforova in Sarycheva, et al.

†*Bisepium* gen. nov. p. 39, type species: *B. recticostatum* p. 40, figd., Eifelian, Urals, Khodalevich et al.

†*Conchidiella pseudobaschkirica* p. 28, aff. *pseudobaschkirica* p. 31, *pseudobaschkirica* var. *longicephala* var. nov. p. 32, *calvata* sp. nov. p. 33, *calvata* var. *larga* p. 34, *degener* p. 35 vars. nov., *rossica* p. 36, *longiplutea* sp. nov. p. 37 *triangulicostata* p. 30, all figd., Eifelian, Urals, Khodalevich, et al.

†*Conchidium oehlerti*, figd. pl. 1., Sitter & Zwart.

Gamdaellidae fam. nov. p. 91 for *Gamdaella*, Lower Permian, U.S.S.R., Miloradovich.

†*Gamdaella* gen. nov. p. 92, type species *G. olgae* sp. nov. figd., Lower Permian, U.S.S.R., Miloradovich.

†*Gypidula idelensis* p. 16, *menneri* p. 17, *moulda-wanzewi alfa forma* nov. p. 18, *totaensis* p. 20, *acutolobata* var. *uralotjanschanica* var. nov., p. 21, *osturalica* sp. nov. p. 22, *vaganica* p. 23, *tenuiplicata* p. 24, *weberi* p. 25, all figd. Eifelian, Urals, Khodalevich, et al.; *acutolobata*, p. 91, *acutolobata* var. *uralotjanschanica* p. 92, Lower Devonian, U.S.S.R., Khodalevich (1).

†*Gypidulella* gen. nov., type species: *G. pennatula* sp. nov. p. 26, figd., Eifelian, Urals, Khodalevich, et al.

†*Jolvina* gen. nov. p. 56, type species: *J. multiplexa* sp. nov. p. 58, *scalaris* p. 60, *longisulcata* p. 61 spp. nov. Silurian, U.S.S.R., Sapel'nikov.

†*Kulumbella* gen. nov. p. 61, type species: *K. kulumbensis* sp. nov. p. 62, figd., *biconvexa* sp. nov. p. 64, figd., Silurian, U.S.S.R., Nikiforova.

†*Leviconchidiella* gen. nov. type species: *Sieberella* (?) *varganica* Khodalevich 1951, p. 301, Middle Devonian, U.S.S.R., Rzhonsnitskaya (1).

Order Pentamerida proposed for Porambonitacea, Camerellacea, Pentameracea, p. 197, Sarycheva, et al.

Suborder TRIPLESIOIDEA

TRIPLESIACEA

†*Streptis monilifera*, *monilifera altosinuata* p. 259, figd., Wright.

Suborder STROPHOMENOIDEA

PLECTAMBONITACEA

†*Aegiria aquila aquila* p. 399, *aquila praecursor* subsp. nov. p. 401, *descendens* sp. nov. p. 402, *quiesita* p. 403, all figd. Ordovician, Czechoslovakia, Havlíček.

†*Benignites* gen. nov. p. 409, type species: *Strophomena primula* p. 410, Ordovician, Czechoslovakia, Havlíček; (*Leptostina*) subgen. nov. *prantli* sp. nov. p. 412, Ordovician, Czechoslovakia, Havlíček.

†*Foliomena* gen. nov., type species: *Strophomena folium* Barrande, 1879, p. 413 figd., Ordovician, Czechoslovakia, Havlíček.

†*Sowerbyella soudleyensis* p. 167, p. 168, *sericea* p. 168, Dean.

†*Kozlowskites* gen. nov. p. 406, type species: *Strophomena nuncia* Barrande, 1879, 407. Ordovician, Czechoslovakia, Havlíček.

†*Sowerbyella tristis* p. 408, Havlíček.

STROPHOMENACEA

†*Altaestrophia* gen. nov. p. 96, type species: *Leptodontella acuta* Khalifin, 1948, figd., Devonian, U.S.S.R., Bublichenko.

†*Dowillina* (*Mesodowillina*) *triculta* p. 301, figd.,

†*Dowillina* ? *crickmayi* sp. nov. p. 212, figd., Ur. Devonian, Canada, Pedder.

- †*Kjaerina* aff. *jonesi*, p. 167, *bipartita* p. 168, Dean.
- †*Leptaena* "rhomboidalis" p. 49, figd., Boucot & Arndt; cf. "rhomboidalis" p. 300, figd., Boucot; sp. p. 148, figd., Dedeev & Lapina.
- †*Leptostrophia* ? cf. *subarachnoidea*, cf. *eplanata* p. 304, both figd., Boucot.
- †*Nervostrophia borealis* p. 209, *maclareni* p. 210, spp. nov. figd., Ur. Devonian, Canada, Pedder.
- †*Opikinae* subfam. nov. for *Opikina*, *Opikinella*, *Macrocoelia*, *Platymena*, *Glyptomena*, ? *Kirkina*, p. 211, Sokolskaja in Sarycheva et al.
- †*Plicostropheodonta* gen. nov., type species: *Orthis murichisoni* Verneuil et Archiac, 1842, p. 214, figd. Devonian, U.S.S.R., Sokolskaja in Sarycheva, et al.
- †*Proteptostrophia* cf. *blainvilliei* p. 48, figd., Boucot & Arndt.
- †*Pseudoleptaena* gen. nov. p. 97, type species: *P. distorta* (Sowerby) figd., Lower Carboniferous, U.S.S.R., Miloradovich.
- †*Rafinesquina expansa* p. 167, Dean.
- †*Rhenostrophia* subgen. nov. p. 483, figd. type species: *Orthis subarachnoidea* d'Archiac et De Verneuil, 1842. Lower Devonian, Nova Scotia, Boucot (1).
- †*Shaleria rigida* p. 302, figd., Boucot; sp. p. 12, figd., Boucot (2).

ORTHOTETACEA

- †*Derbyia crassa* p. 711, figd., Hoare & Burgess; cf. *grandis* p. 52, D. sp. p. 53, both figd., Harker.
- Omboniinae* subfam. nov. for *Ombonia*, *Geyerella*, *Orthotetes*, *Pseudoderbyia*, *Orthotetella*, *Sicelia*, *Gemmelaria*, *Perigeyrella*, *Werriena*, *Permorthotetes* p. 218, Sokolskaja in Sarycheva, et al.
- †*Orthotetes regularis* p. 34, *expansus* p. 37, *hindi quadratus* p. 38, *cardiformis trigonus* p. 39, all figd., Volgin (1).
- †*Meekella* aff. *irregularis* p. 39, figd., Volgin (1).
- †*Schuchertella adoceta* sp. nov. p. 18, figd., Middle Devonian, Canada, Crickmay; *euzona* p. 305, figd., Boucot; *fascifera* p. 318, figd., Gunia & Gorecka; ? *reticulata* p. 148, figd., Dedeev & Lapina; ? sp. p. 49, figd., Boucot & Arndt.
- †"Schuchertella" sp. p. 13, figd., Boucot (2).
- †*Streptorhynchus kempei* p. 50, *triangularis* p. 51 both figd., Harker.
- †*Agramatia agramati* p. 148, figd., Muir-Wood & Cooper.
- †*Alexenia gratiodentalis* p. 92, cf. *reticulata* p. 95, both figd., Volgin (1); *reticulata* p. 233, figd., Muir-Wood & Cooper.
- †*Alifera* gen. nov. p. 207, type species: *Productus expansus* de Koninck, 1842, figd., Lower Carboniferous, Europe, Belgium, Great Britain, Russia., Muir-Wood & Cooper; *konincki* nom. nov. for *Productus expansus* de Koninck, 1842, p. 208, A. *panderi* nom. nov. for *Productus minutus* Muir-Wood, 1928, p. 209., Muir-Wood & Cooper.
- †*Anidanthus shastensis* sp. nov. p. 287, figd., Permian, U.S.A., Coogan; *springsuensis* p. 300, figd., Muir-Wood & Cooper.
- †*Antiquatonia antiquatus* p. 270, figd., Muir-Wood & Cooper; *insculpta*, cf. *insculpta* p. 153, figd., Dedeev & Lapina.
- †*Argentiprimitus margaritaceus* p. 183, figd., Muir-Wood & Cooper.
- †*Auloprotonia* gen. nov. p. 273, type species: *A. aulacophoria* sp. nov. p. 274, figd., Mississippian, U.S.A., Muir-Wood & Cooper.
- †*Aulosteges wangenheimi* p. 96, figd., Muir-Wood & Cooper.
- Aulostegidae* fam. nov. p. 94, Muir-Wood & Cooper.
- Aulosteginae* subfam. nov. p. 95, for *Aulosteges*, *Taeniothaerus*, *Wyatkina*, Permian, Muir-Wood & Cooper.
- †*Avonia krutoyensis* p. 45, *echidniformis* p. 47, aff. *pustulata* p. 49, all figd., Volgin (1); *youngiana* p. 185, figd., Muir-Wood & Cooper.
- Avoniidae* fam. nov. for *Mesoplica*, *Avonia*, *Argentiprimitus*, *Productina*, *Plicatifera*, *Jakuto-productus*, *Protoniella*, *Haydenella*, *Bispinoproductus*, p. 226, Sarycheva in Sarycheva, et al.
- †*Bagrasia* gen. nov. type species: *Productus chonetiformis* Krestovnikov and Karpyahev, 1948, Ur. Devonian to Lr. Carboniferous, U.S.S.R. p. 231, Sarycheva in Sarycheva, et al.
- †*Bathymyonia* gen. nov. p. 244, type species: *Productus nevadensis* Meek, 1877. Permian, Western U.S.A. p. 245, figd., Muir-Wood & Cooper.
- †*Bilotina sublecta* p. 122, figd., Muir-Wood & Cooper.
- †*Buztonia subpunctata* p. 41, *mosquensis* p. 53, *kalivaensis* p. 55, figd., Volgin (1); *scabriculus* p. 256, figd., Muir-Wood & Cooper.
- Buxtoniidae* fam. nov. p. 255, Lower Carboniferous—Permian, Muir-Wood & Cooper.

Suborder PRODUCTOIDEA

PRODUCTACEA

- †*Acanthatia nupera* gen. nov. p. 158, figd., Muir-Wood & Cooper.
- †*Acanthoptecta* gen. nov. p. 170, type species: *Producta mesoloba* J. Phillips, 1836, p. 171, figd., Lr. Carboniferous, Belgium, Muir-Wood & Cooper.
- †*Calliprotonia* gen. nov. p. 246, type species: *C. renfrarum* sp. nov. p. 247, figd., Upper Pennsylvanian—? Lower Permian, U.S.A. and central Peru, Muir-Wood & Cooper.

†*Cancrinella cancrini* p. 302, figd., Muir-Wood & Cooper; *germanicus* p. 56, figd., Harker; *phosphatica* p. 290, figd., Coogan; *undata geniculata* p. 66, figd., Volgin (1).

†*Cardinocrania indica* p. 137, figd., Muir-Wood & Cooper.

†*Chaoiella grünevaldti* p. 276, figd., Muir-Wood & Cooper.

†*Chonetella nasuta* p. 220, figd., Muir-Wood & Cooper.

Chonetellidae fam. nov. for *Chonetella*, p. 226, Licharew in Sarycheva et al.

†*Chonetipustula carringtoniana* p. 357, figd., Zakowa; *plicata* p. 319, figd., Gunia & Górecka; *plicata* p. 159, figd., Muir-Wood & Cooper.

†*Chonopectus fischeri* p. 156, figd., Muir-Wood & Cooper.

†*Chonosteges* gen. nov., type species: *Aulosteges magnicostatus* Girty, 1909, p. 113, Permian, Texas, Muir-Wood & Cooper.

†*Cinctifera* gen. nov., type species: *Productus medusa* de Koninck 1842, p. 165, figd., Lr. Carboniferous, Belgium, Muir-Wood & Cooper.

†*Compressoproducetus* gen. nov., type species: *Productus compressus* Waagen, 1884, p. 231, Sarycheva in Sarycheva, et al.

†*Coscinarina* gen. nov., type species: *Richthofenia communis* Gemmellaro, 1894, Permian, Sicily, Muir-Wood & Cooper.

†*Costellaria* gen. nov., p. 123, type species: *C. costellata* sp. nov. p. 124, figd., Lr. Permian, Texas, U.S.A., Muir-Wood & Cooper.

†*Costiferina* gen. nov., type species: *Productus indicus* Waagen, 1884, p. 277, figd., Permian, Salt Range, Himalayas, Muir-Wood & Cooper.

Costispiniferinae subfam. nov. p. 217, for *Costispinifera*, *Chonetella*, *Echinauris*, *Elliottella*, *Haydenella*, *Inflatia*, *Liosotella*, *Rudinia*, Mississippian—Permian, Muir-Wood & Cooper.

†*Costispinifera* gen. nov. p. 217, type species: *C. texana* sp. nov. p. 218, figd., Permian, Texas, U.S.A., Muir-Wood & Cooper.

†*Craspedalosia* gen. nov. p. 82, type species: *Orthothrix lamellosa* Geinitz 1848, figd., Upper Permian, Germany, Muir-Wood & Cooper.

†*Crossalosia* gen. nov. p. 75, type species: *Productus buchianus* de Koninck, 1847, figd., Lower Carboniferous, Belgium, Muir-Wood & Cooper.

†*Ctenalosia fixata* p. 92, figd., Muir-Wood & Cooper.

Ctenalosinae subfam. nov. p. 91, for *Ctenalosia*, Middle Permian, Muir-Wood & Cooper.

†*Dasyalosia* gen. nov. p. 76, type species: *Spondylus goldfussi* Münster, 1839, figd., Permian, Germany, Muir-Wood & Cooper.

†*Devonalosia* gen. nov. p. 83, type species: *D. wrightorum* sp. nov. p. 85, figd., Middle Devonian, Canada., Muir-Wood & Cooper.

†*Devonoproducetus walcotti* p. 177, figd., Muir-Wood & Cooper.

Devonoproducetinae subfam. nov. p. 177, for *Devonoproducetus*, *Productellina*, Middle Devonian—Early Carboniferous, Muir-Wood & Cooper.

†*Derbyella bureri* p. 131, figd., Muir-Wood & Cooper.

†*Desmoinesia* gen. nov., type species: *Productus muricatus* Norwood and Pratten, 1854, p. 226, *D. nana* p. 227, both figd., Pennsylvanian, Missouri, U.S.A., Hoare.

†*Diaphragmus elegans* p. 242, figd., Muir-Wood & Cooper.

†*Dictyoclostus articus* p. 282, *bassi elongatus* subsp. nov. p. 283, both figd., Permian, U.S.A., Coogan; *bathycolpos* p. 79, *donetzianus* p. 81 *neoinflatus* p. 85, *orientalis* p. 87, *latus* p. 89, *uralicus* p. 91 all figd., Volgin (1); *dinsti* p. 321, *Gunia* & *Górecka*; *neoinflatus* p. 65, figd., Harker; *paradoxus* p. 4, figd., Maxwell; *portlockianus* p. 712, *hermosanus*, *gallatiensis* p. 713, all figd., Hoare & Burgess; *semireticulatus* p. 269, figd., Muir-Wood & Cooper; *tiawahensis* sp. nov., p. 224, fig., Pennsylvanian, Missouri, U.S.A., Hoare; aff. *spiralis* p. 497, *sino-indicus* p. 499, aff. *grünevaldti* p. 501, *taiyuanfuensis* var. *loczyi* var. nov. p. 503, *inflatiformis* var. *expansus* p. 505, sp. A. p. 507, aff. sp. A. p. 508, *grabau* sp. nov. p. 509, all figd., Middle Permian, Japan, Nakamura.

†*Echinaria* gen. nov., type species: *Productus semipunctatus* Shepard, 1838, p. 248, figd., Pennsylvanian, U.S.A., South Manchuria, Muir-Wood & Cooper.

†*Echinauris* gen. nov. p. 221, type species: *E. lateralis* sp. nov. p. 222, figd., Middle Permian, Texas, Muir-Wood & Cooper.

†*Echinoconchus komischani* p. 59, *elongatus* p. 60, *postpunctatus* p. 62, Volgin (1); *punctatus* p. 244, figd., Muir-Wood & Cooper; ex. gr. *punctatus* p. 149, figd., Dedeev & Lapina.

†*Echinosteges* gen. nov. p. 101, type species: *Aulosteges tuberculatus* p. 102, figd., Middle Permian, Texas, U.S.A., Muir-Wood & Cooper.

†*Edriosteges* gen. nov., p. 103, type species: *E. multispinosus* sp. nov. p. 104 figd., Lower Permian, Texas, U.S.A., Muir-Wood & Cooper.

†*Elliottella transversalis* p. 224, figd., Muir-Wood & Cooper.

†*Eomarginifera* p. 209, type species: *Productus longispinus* J. Sowerby, 1814, figd., Lower Carboniferous—Ur. Carboniferous, Muir-Wood & Cooper.

†*Ericiata* gen. nov., type species: *Productus newberryi* Hall, 1857, p. 172, figd., Mississippian, Ohio, Muir-Wood & Cooper.

†*Etheridgina complectens* p. 257, figd., Muir-Wood & Cooper.

†*Fimbriaria* gen. nov., type species: *Overtonia plummeri* R. H. King, 1938, figd., Late Pennsylvanian and Permian North and South America, Muir-Wood & Cooper.

†*Flexaria* gen. nov. p. 258, type species: *Productus arkansanus* Girty, 1910, p. 250., Mississippian, U.S.A., Muir-Wood & Cooper.

†*Fluctuaria* gen. nov. p. 303, type species: *Productus undatus* DeFrance, 1826, p. 304, figd., Lower Carboniferous, Europe and Russia, Muir-Wood & Cooper.

†*Galeatella* gen. nov. p. 173, type species: *G. galeata* sp. nov. p. 174, figd., Ur. Devonian, New Mexico., Muir-Wood & Cooper.

†*Gemmellaroia marii* p. 141, figd., Muir-Wood & Cooper.

†*Gemmellaria* Cossman, 1898 = *Gemmellaroella* Mabuti, 1937, Permian Sicily. Muir-Wood & Cooper.

†*Geniculifera* gen. nov. type species: *Avonia boonenensis* E. B. Branson, 1938, Mississippian, U.S.A., Muir-Wood & Cooper.

†*Gigantoproductus giganteus* p. 331, figd., Muir-Wood & Cooper; *striato-sulcatus* var. *semiglobosa*, *latissima*, p. 320, figd. *latissimus* var. *prisca*, cf. *bisati* p. 321, Gunia & Görecka.

Gigantoproductidae fam. nov. for *Gigantoproductinae* subfam. nov. for *Gigantoproductus*, *Semiplanus*, *Titanaria*, Lower Carboniferous, Muir-Wood & Cooper.

†*Giriasia superelegans* p. 106, figd., Muir-Wood & Cooper.

†*Globiella* gen. nov. p. 304, type species: *Productus hemisphaerium* Kutorga, 1844, p. 305, figd., Ur. Permian, Europe, Russia, Arctic, † Lr. Permian, China, Armenia, India, Muir-Wood & Cooper.

†*Grandaurispina* gen. nov. p. 305, type species: *G. kingorum* sp. nov. p. 306, figd., Permian, Texas, Muir-Wood & Cooper.

†*Hamlingella goergesi* p. 161, figd., Muir-Wood & Cooper.

†*Haydenella kiangsiensis* p. 225, figd., Muir-Wood & Cooper.

†*Helaspis luma* p. 156, Muir-Wood & Cooper.

†*Heteralosia slocomi* p. 81, figd., Muir-Wood & Cooper.

Heteralosiinae subfam. nov. p. 80, for *Heteralosia*, *Craepedalosia*, *Devonalosia*, *Leptalosia*, *Lialosia*, *Sphenalosia*, *Wyndhamia* (= *Branztonia*), *Truncalosia*, *Oligorachia*, Middle Devonian to Ur. Permian, Muir-Wood & Cooper.

†*Horridonia horrida* p. 293, figd., Lower to Ur. Permian, England, Europe, Arctic regions, Asia, ? Australia, Muir-Wood & Cooper; *subhorrida* p. 291, figd., Coogan.

Horridoniidae fam. nov. for *Horridonia*, *Sowerbina*, ? *Pleurohorridonia* p. 234, Carboniferous to Permian, Sarycheva in Sarycheva, et al.

Horridoniinae subfam. nov. p. 292 for *Horridonia* (*Pleurohorridonia* syn., *Sowerbina* syn.), Permian, Muir-Wood & Cooper.

†*Hystriculina* gen. nov. p. 210, type species: *H. texana* sp. nov. p. 211, figd., Pennsylvanian and Lr. Permian, North and South America, Muir-Wood & Cooper.

†*Inflatia* gen. nov. p. 226, type species: *Productus inflatus* McChesney, 1860, figd., Mississippian, U.S.A., Muir-Wood & Cooper.

†*Institella leonardensis* p. 118, figd., Muir-Wood & Cooper.

Institellinae subfam. nov. p. 117, for *Institella*, Permian, Muir-Wood & Cooper.

†*Institifera* gen. nov. p. 203, type species: *Productus tessellatus* de Koninck, 1847, figd., Lower Carboniferous (Visean), Belgium, England, Ireland, Muir-Wood & Cooper.

Institiferinae subfam. nov. p. 203, for *Institifera*, *Thomasella*, Lower Carboniferous (Visean), Muir-Wood & Cooper.

†*Institina* gen. nov. type species: *Productus marginalis* de Koninck, 1847, p. 164, figd., Lr. Carboniferous, Belgium, Muir-Wood & Cooper.

Institinidae fam. nov. for *Institina*, *Cinctifera*, *Rugicostella*, p. 164, Muir-Wood & Cooper.

†*Juresania juresanensis* p. 267, figd., Muir-Wood & Cooper.

Juresaniinae subfam. nov. p. 266, for *Juresania*, *Ramavectus*, Pennsylvanian and Permian, Muir-Wood & Cooper.

†*Kansuella kansuensis* p. 337, figd., Muir-Wood & Cooper.

Kansuellinae subfam. nov. p. 336, for *Kansuella*, Lower Carboniferous (Visean). Muir-Wood & Cooper.

†*Kochiproductus freboldi* p. 59, figd., Harker; *porrectus* p. 260, figd., Muir-Wood & Cooper.

†*Kozlowskia capacti* p. 213, figd., Muir-Wood & Cooper.

†*Krotovia spinulosa* p. 188, figd., Muir-Wood & Cooper.

†*Kutorginella genuina* p. 99, *dastarensis* p. 101, both figd., Volgin (1); *mosquensis* p. 234, figd., Muir-Wood & Cooper.

†*Laminatia* gen. nov. p. 189, type species: *Productella laminata* Kindle, 1909, p. 190, figd., Ur. Devonian, U.S.A., Muir-Wood & Cooper.

†*Labriproductus wortheni* p. 262, figd., Muir-Wood & Cooper.

†*Leioproductus coloradoensis* var. *plicatus*, p. 168, figd., Muir-Wood & Cooper.

Leioproductidae fam. nov. p. 167, for *Leioproductinae* subfam. nov. p. 168, for *Leioproductus* (= *Bispinoproductus*), *Acanthoplecta*, *Ericiatia*, *Galeatella*, *Mesoplecta*, *Planoproductus* Ur. Devonian—Mississippian, Muir-Wood & Cooper.

†*Leptalosia scintilla* p. 85, figd., Muir-Wood & Cooper.

†*Levipustula levis* p. 191, figd., Muir-Wood & Cooper.

†*Levitusia* gen. nov., type species: *Productus humerosus* J. Sowerby, 1822, p. 295, figd., Lower Carboniferous, Europe & Asia, Muir-Wood & Cooper.

Levitusiinae subfam. nov. p. 295, for *Levitusia*, Lower Carboniferous, Muir-Wood & Cooper.

†*Limbella wolfsampensis* p. 107, figd., Muir-Wood & Cooper.

†*Linoproductus cora* p. 297, figd., Muir-Wood & Cooper; *nasutus* p. 290, Coogan; *neffedjevi* p. 68, *lineatus* p. 70, *simensis* p. 72, *cora-lineatus* p. 74, *ovalis* p. 77, all figd., Volgin (1); *planiventralis*, *echinatus* p. 228, *distortus* p. 229, spp. nov. all figd., Pennsylvanian, Missouri, U.S.A., Hoare; *prattenianus* p. 712, figd., Hoare & Burgess; *teniusistriatus* var. *transuralica* p. 150, figd., Dedeev & Lapina.

†*Lialosia* gen. nov. type species: *Strophalosia kimberleyensis* Prendergast, 1943, p. 86, figd., Permian, Western Australia, Muir-Wood & Cooper.

†*Liosotella cooperi* sp. nov. p. 285, figd., Permian, U.S.A., Coogan; *rugosa* p. 228, figd., Muir-Wood & Cooper.

†*Loczyella nankingensis* p. 143, Muir-Wood & Cooper.

†*Marginatia* gen. nov. p. 262, type species: *Productus fernglenensis* Weller, 1909, Mississippian, U.S.A., Muir-Wood & Cooper.

†*Marginicinctus marginicinctus* p. 264, figd., Muir-Wood & Cooper.

†*Marginifera schellwieni* p. 102, *pusilla* p. 104, aff. *borealis* p. 105, all figd., Volgin (1); *schartymiensis* p. 154, figd., Dedeev & Lapina; *typica* p. 206, figd., Muir-Wood & Cooper.

†*Marginirugus magnus* p. 308, figd., Muir-Wood & Cooper.

†*Megousia* gen. nov. p. 309, type species: *M. auriculata* sp. nov. p. 310, figd., Permian, Texas and Mexico, Muir-Wood & Cooper.

†*Mesoplica praelonga* p. 175, figd., Muir-Wood & Cooper.

†*Monticulifera* gen. nov. type species: *Productus intermedius* p. 327, figd., Lower Permian, China, Ur. Permian, Indochina, Muir-Wood & Cooper.

Monticuliferinae subfam. nov. for *Monticulifera* p. 327, Permian, Muir-Wood & Cooper.

†*Muirwoodia californica* sp. nov. p. 287, figd., Permian, U.S.A., Coogan; *mammatus* p. 323, figd., Muir-Wood & Cooper; *mammatus* p. 58, figd., Harker; (?) *aurita* p. 108, figd., Volgin (1).

†*Neoproboscidea* ? Author. Mentioned but not described by E. A. Ivanova (1949, p. 47) Probably near *Kutorginella*, p. 338, Muir-Wood & Cooper.

†*Neoproductella* nom. nud. Grabau & Tien. Listed by Lee (1939, p. 487). Description never published p. 338, Muir-Wood & Cooper.

†*Neoproductus Nikitin* (1900, p. 385) nomen nudum, p. 338, Muir-Wood & Cooper.

†*Nudauris diabloensis* p. 229, figd., Muir-Wood & Cooper.

†*Oligorachis oligorachis* p. 91, Muir-Wood & Cooper.

†*Orbinaria* gen. nov. type species: *Productella pyzidata* p. 149, figd., Mississippian, Missouri, U.S.A., Muir-Wood & Cooper.

†*Ovatia* gen. nov. p. 311, type species: *O. elongata* sp. nov. p. 312, figd., Mississippian, U.S.A. Lr Carboniferous, Russia, Muir-Wood & Cooper.

†*Overtonia fimbriata* p. 183, figd., Muir-Wood & Cooper.

Overtoniidae fam. nov. p. 183, Upper Devonian—Permian, Muir-Wood & Cooper.

Overtoniinae subfam. nov. p. 183, for *Overtonia*, *Avonia*, *Fimbriaria*, *Geniculifera*, *Krotovia*, *Laminatia*, *Levipustula*, *Rhytiophora*, *Rugauris*, *Semicostella*, *Sentosa*, *Setigerites*, *Stegacanthia*, *Stipulina*, *Semiproductus*, Muir-Wood & Cooper.

†*Paramarginifera clarkei* p. 215, figd., Muir-Wood & Cooper.

†*Paucispinifera* gen. nov. p. 319, type species: *P. auriculata* sp. nov. p. 320, figd., Permian, Texas, Muir-Wood & Cooper.

Paucispiniferinae subfam. nov. p. 319 for *Paucispinifera*, *Muirwoodia*, *Yakoulevia*, Permian, Muir-Wood & Cooper.

†*Penicularis* gen. nov. p. 278, type species: *P. mckeei* sp. nov. p. 280, Permian, Texas, Muir-Wood & Cooper.

†*Planispina conida* p. 94, figd., Muir-Wood & Cooper.

†*Planoproductus hillsboroensis* p. 177, figd., Muir-Wood & Cooper.

†*Pleurohorridonia scoresbyensis* p. 294, Muir-Wood & Cooper.

†*Plicatifera* cf. *mesoloba*, *plicatilis* p. 319, both figd., Gunia & Górecka; *mennerti* sp. nov. p. 143, figd., Ur. Devonian, U.S.S.R., Sidiachenko; *plicatilis* p. 202, figd., Muir-Wood & Cooper.

Plicatiferinae subfam. nov. p. 201, for *Plicatifera*, Lower Carboniferous, Muir-Wood & Cooper.

†*Praevaagenoconcha oreliana* p. 151, figd., Muir-Wood & Cooper.

†*Probolionia posteroreticulata* p. 238, figd., Muir-Wood & Cooper.

Probolioniinae subfam. nov. p. 237, for *Probolionia*, Permian, Muir-Wood & Cooper.

†*Proboscidea proboscidea* p. 326, figd., Muir-Wood & Cooper.

Proboscidellinae subfam. nov. p. 325, for *Proboscidea*, Lower Carboniferous, Muir-Wood & Cooper.

†*Productina sampsoni* p. 181, figd., Muir-Wood & Cooper.

Productininae subfam. nov. p. 181 for *Productina*.
Argentipræductus Lr. Carboniferous (Viséan) and
Mississippian, Muir-Wood & Cooper.

†*Productella subaculeata* p. 146, figd., Muir-Wood & Cooper.

†*Productellana bifaria* p. 151, figd., Muir-Wood & Cooper.

†*Productellina fremingtonensis* p. 180, figd., Muir-Wood & Cooper.

†*Productus productus* p. 239, figd., Muir-Wood & Cooper.

†*Productus* (*Dictyoclostus*) aff. *americanus* p. 22, figd., Gräf.

†*Prorichthofenia permiana* p. 140, figd., Muir-Wood & Cooper; (?) cf. *teguiferoides* p. 24, figd., Gholubkov.

Prorichthofeniinae subfam. nov. p. 139, for *Prorichthofenia*, Permian, Muir-Wood & Cooper.

†*Protoniella beedei* p. 265, figd., Muir-Wood & Cooper.

†*Pseudomarginifera ussuricus* p. 314, figd., Muir-Wood & Cooper.

†*Pugilis pugilis* p. 282, figd., Muir-Wood & Cooper.

†*Pulchratia* gen. nov. p. 249, type species: *Productus symmetricus* McChesney, 1860, figd., Pennsylvanian, U.S.A., Muir-Wood & Cooper.

†*Pustula pustulosa* p. 251, figd., Muir-Wood & Cooper.

†*Quadratia* gen. nov. p. 161, type species: *Productus hirsutiforme* Walcott, 1884, Mississippian, Arkansas, Oklahoma, Texas, Nevada, U.S.A., Muir-Wood & Cooper.

†*Ramavectus diabloensis* p. 268, figd., Muir-Wood & Cooper.

†*Retaria* gen. nov. p. 230, type species: *R. umbonata* sp. nov. p. 231, figd., Permian, Texas, Muir-Wood & Cooper.

Retariinae subfam. nov. p. 230, for *Retaria*, *Alezania*, *Kutorinella*, *Rugivestis*, *Tubaria*, Carboniferous—Permian, Muir-Wood & Cooper.

†*Reticulatia* gen. nov., type species: *Productus huecoensis* R. E. King, 1931, p. 284, figd., Pennsylvania—Permian, U.S.A., Muir-Wood & Cooper.

†*Rhamnaria* gen. nov. p. 119, type species: *R. kingorum* sp. nov. p. 120 figd., Permian, Texas, U.S.A., Muir-Wood & Cooper.

Rhamnariinae subfam. nov. p. 119, for *Rhamnaria*, *Bilotina*, Permian, Muir-Wood & Cooper.

†*Rhytiophora* gen. nov., type species: *Productus blairi* Miller, 1891, p. 192, Mississippian, U.S.A., Muir-Wood & Cooper.

†*Richthofenia lawrenciana* p. 136, figd., Muir-Wood & Cooper.

†*Rudinia* gen. nov. p. 229, type species: *Productus muricatus* Norwood & Pratt, 1855, figd., Pennsylvanian, U.S.A., Muir-Wood & Cooper. = *Desmoinesia* Hoare, 1960.

†*Rugatia* gen. nov. p. 285, type species: *Productus paraindicus* McKee, 1938, p. 286, figd., Permian, Texas, and Arizona, U.S.A., Muir-Wood & Cooper.

†*Rugauris* gen. nov., p. 193, type species: *R. paucispina* sp. nov. p. 194, Mississippian, U.S.A., Muir-Wood & Cooper.

†*Rugicostella* gen. nov. type species: *Productus nystianus* de Koninck, 1842, p. 166, figd., Lower Carboniferous, Belgium, Muir-Wood & Cooper.

†*Rugivestis* gen. nov. p. 235, type species: *Proboscoidella ? carinata* Muir-Wood & Cooper, 1957, figd., Permian, U.S.A. and Russia, Muir-Wood & Cooper.

†*Scacchinella variabilis* p. 129, figd., Muir-Wood & Cooper.

†*Semicostella* gen. nov. p. 195, type species: *Aconia oklahomensis* Snider, 1915, figd., Mississippian, Oklahoma, U.S.A., Muir-Wood & Cooper.

†*Semiplanulus mikhailovensis* p. 152, figd., Dedeov & Lapina; *semiplanulus* p. 333, figd., Muir-Wood & Cooper.

Semiplanidae fam. nov. for *Bagrassia*, *Semiplanulus*, p. 231, *Sarycheva* in *Sarycheva* et al.

†*Semiproductus minax* p. 201, Muir-Wood & Cooper.

†*Sentostia* gen. nov. p. 196, type species: *Krotovia praecursor* Stainbrook, 1947, figd., Upper Devonian, New Mexico, U.S.A., Muir-Wood & Cooper.

†*Septarinia* gen. nov. p. 251, type species: *Productus leuchtenbergensis* de Koninck, 1847, p. 252, figd., Lower Carboniferous, Belgium, Muir-Wood & Cooper.

†*Setigerites setiger* p. 197, figd., Muir-Wood & Cooper.

†*Sinoproductella hemispherica* p. 152, figd., Muir-Wood & Cooper.

†*Sinuatella sinuata* p. 125, figd., Muir-Wood & Cooper.

Sinuatellidae fam. nov. p. 124, for *Sinuatella*, Lower to Upper Carboniferous, Muir-Wood & Cooper.

†*Soverbina timanica* p. 294, figd., Muir-Wood & Cooper.

†*Sphenalosia* gen. nov. p. 87, type species: *S. smedleyi* sp. nov. p. 88, figd., Permian, Wyoming, U.S.A., Muir-Wood & Cooper.

†*Sphenosteges* gen. nov. type species: *Aulosteges hispidus* Girty, 1920, p. 108, figd., Permian, Utah, U.S.A., Muir-Wood & Cooper.

†*Spinifrons quadratus* p. 287, figd., Muir-Wood & Cooper.

†*Spinomarginifera kusichowensis* p. 216, figd., Muir-Wood & Cooper.

†*Spinulicosta spinulicosta* p. 153, figd., Muir-Wood & Cooper; *stainbrookii* sp. nov. p. 18, figd., Middle Devonian, Canada, Crickmay.

†*Spirisiosium primarium* p. 109, figd., Muir-Wood & Cooper.

†*Spyridiophora distincta* p. 144, figd., Muir-Wood & Cooper.

Spyridiophoridae fam. nov. p. 144, for *Spyridiophora*, Pennsylvanian and Permian, Muir-Wood & Cooper.

†*Squamaria* gen. nov. p. 287, type species: *S. moorei* sp. nov. p. 289, figd., Permian, Texas, Muir-Wood & Cooper.

†*Steinhagella membranacea* p. 164, Muir-Wood & Cooper.

†*Stegacanthia* gen. nov. p. 198, type species: *Stegacanthia bowsheri* sp. nov. p. 199, figd., Mississippian, U.S.A., Muir-Wood & Cooper.

†*Stepanoviella* gen. nov. p. 336, type species: *S. paracurvata* sp. nov. p. 337, Upper Permian, U.S.S.R., Zavodovsky.

†*Stipulina* gen. nov. p. 200, type species: *Productus deshayesianus* de Koninck, 1842, figd., Lower Carboniferous (Viséan), Belgium and England, Muir-Wood & Cooper.

†*Striatifera* ex gr. *magna* p. 151, figd., Dedecev & Lapina; ex gr. *striata* p. 24, figd., Gholubkov; *striata* p. 329, figd., Muir-Wood & Cooper.

Striatiforinae subfam. nov. for *Striatifera* p. 328, Lower Carboniferous and Permian, Muir-Wood & Cooper.

Strophalosiaceae superfam. nov. p. 71, for *Strophalosiidae*, *Teguliferinidae*, *Aulostegidae*, *Sinuatellidae*, *Tschernyschewiidae*, *Scacchinellidae*, *Richthofeniidae*, *Spyridiophoridae*, Lr. Devonian—Permian, Muir-Wood & Cooper.

†*Strophalosiella coraeformis* p. 110, figd., Muir-Wood & Cooper.

†*Strophalosiina tibetica* p. 115, figd., Muir-Wood & Cooper.

†*Strophopproductus hystericula* p. 155, figd., Muir-Wood & Cooper.

†*Taeniothaerus subquadratus* p. 98, figd., Muir-Wood & Cooper.

†*Tectarea robinsoni* p. 143, figd., Permian, U.S.S.R., Muir-Wood & Cooper.

†*Teguliferina deformis* p. 93, figd., Muir-Wood & Cooper.

Teguliferinidae fam. nov. p. 92, for *Teguliferina*, *Planispina*, Upper Carboniferous to Middle Permian, Muir-Wood & Cooper.

Teguliferidae fam. nov. p. 236, for *Teguliferina*, *Proteguliferina*, *Planispina*, Carboniferous to Permian, Licharew in Sarycheva et al.

†*Terrakea brachythaerus* p. 317, figd., Muir-Wood & Cooper.

Thomasella margaritacea p. 319, figd., Guina & Görecka; *wrighti* p. 205, figd., Muir-Wood & Cooper.

†*Titanaria* gen. nov. p. 334, type species: *T. costellata* sp. nov. p. 335, figd., Mississippian, U.S.A., Muir-Wood & Cooper.

†*Tolmatchoffia robustus* p. 290, figd., Muir-Wood & Cooper.

†*Truncalosia gibbosa* p. 91, Muir-Wood & Cooper.

†*Tschernyschewia typica* p. 127, figd., Muir-Wood & Cooper.

Tschernyschewiidae fam. nov. p. 126, for *Tschernyschewia*, Permian, Muir-Wood & Cooper.

†*Tubaria* gen. nov. p. 236, type species: *Productus genuinus* Kutorga, 1844, figd., Lr. Permian, Russia, Muir-Wood & Cooper.

†*Tyloplecta* gen. nov. p. 290, type species: *Productus scabriculus* mut. *nankingensis* Frech, 1911, p. 291, figd., Permian, China and Europe, Muir-Wood & Cooper.

†*Undaria* gen. nov. p. 317, type species: *U. manxensis* sp. nov. p. 318, figd., Lower Carboniferous (Viséan), U.K. and Belgium, Muir-Wood & Cooper.

†*Urushtenia mexicaniformis* p. 97, figd., Volgin (1).

†*Urushtenia pseudomedusa* p. 116, figd., Muir-Wood & Cooper.

†*Waagenoconcha humboldti* p. 253, figd., Muir-Wood & Cooper; *payeri* ? p. 61, W. cf. *irginiaeformis* p. 62, Harker.

Waagenoconchinae subfam. nov. p. 252, for *Waagenoconcha*, Upper Pennsylvanian—Ur. Permian, Muir-Wood & Cooper.

†*Whidbornella caperata* p. 163, figd., Muir-Wood & Cooper.

†*Wyatkina gigas* p. 101, figd., Muir-Wood & Cooper.

†*Wyndhamia dalwoodensis* p. 89, figd., Muir-Wood & Cooper.

†*Xenosteges* gen. nov. p. 111, type species *X. adherens* p. 112, figd., Permian, Texas, U.S.A., Muir-Wood & Cooper.

†*Yakovlevia kaluzinensis* p. 324, figd., Muir-Wood & Cooper.

NOMINA DUBIA

†*Hunanella* nom. nud. from Lr. Carboniferous, eastern Hunan, China, Lee (1939, p. 468), p. 338, Muir-Wood & Cooper.

INCERTAE SEDIS

†*Pectenopproductus proprius* p. 337, Muir-Wood & Cooper.

Suborder CHONETOIDEA

CHONETACEA

†*Chonetes granulifer* p. 42, figd., Volgin (1); *omaliana* p. 307, figd., Boucot.

†“*Chonetes*” cf. *nectus* p. 49, figd., Boucot & Arnât.

†*Chonetes (Chonetes) dalmanianus* p. 149, figd., Dedecev & Lapina.

†*Chonetes* (*Paeckelmannia*) *capitolinus* p. 53, figd., **Harker**.

†*Chonetina* cf. *timanicus* p. 55, figd., **Harker**.

†*Chonetinella* cf. *sinuosa* p. 291, figd., **Coogan**.

†*Chonetoides* *tenerissima* sp. nov. p. 404, *radiatula* p. 405, Ordovician, Czechoslovakia, **Havlíček**.

†*Daviesiella* cf. *comoides* p. 318, **Gunia & Görecka**.

Daviesiellidae fam. nov. for *Daviesiella*, *Airtonia*, p. 223, **Sokolskaja** in **Sarycheva**, et al.

†*Eodevonaria* cf. *arcuata* p. 49, figd., **Boucot & Arndt**.

†*Eolissochonetes* gen. nov., type species: *Chonetes laevis* Keyes, 1888, p. 220, figd., *bilobatus* sp. nov. p. 221, figd., Pennsylvanian, Missouri, U.S.A., **Hoare**.

†*Mesolobus striatus* sp. nov. p. 222, figd., Pennsylvanian, Missouri, U.S.A., **Hoare**; *striatus* Name originally proposed by **Weller & McGehee** 1933, **Weller**.

Paeckelmanniinae subfam. nov. for *Paeckelmannia*, *Lissochonetes*, *Chonetina*, *Quadrochonetes*, *Anopliopsis*, *Anoplia*, *Semenevia*, *Notanoplia*, *Dyros*, p. 222, **Sokolskaja** in **Sarycheva**, et al.

†*Plicochonetes waldenburgianus* p. 357, figd., **Zakowa**.

Plicochonetinae subfam. nov. for *Plicochonetes*, *Longispina*, *Waagenites*, p. 222, **Sokolskaja** in **Sarycheva**, et al.

DICTYONELLOIDEA

EICHWALDIIIDAE

Dictyonella reticulata, *corallifera*, *concinna*, *gibbosa*, *subgibbosa* p. 31, **Amsden** (1).

INCERTAE SEDIS

†*Isogramma paotchowensis*, *millepunctata* p. 41, both figd., **Volgin** (1).

Suborder RHYNCHONELLOIDEA

RHYNCHONELLACEA

†*Acanthothiris*=correct spelling for *Acanthothyris*, p. 157, **Ager**.

†*Acanthothyris spinosa* p. 168, figd., **Sudić**.

†*Allorhynchus* ? *permanus* sp. nov. p. 74, figd., Permian (Wordian), U.S.A., **Stehli**.

Amissopecten gen. nov. see *Septalariidae* fam. nov.

†*Austriellula* correct name for *Austriella* **Bittner** (1890), *Jacobella* **Patte** (1926), *Austriellina* **Schuchert** and **Lo Veno** (1929), p. 157, **Ager**.

†*Bicornes* **Quenstedt**, type species *Terebratula livonica* von **Buch**=Palaeozoic form from Germany not Mesozoic, p. 161, **Ager**.

†*Calcirhynchia calcaria* p. 29, Lower Lias, Dorset and Glamorgan, **Hallam**.

†*Camarotoechia* sp. 187, **Dean**; *daleidensis*, figd. pl. 1., **Sitter & Zwart**; *nympha* var. *emaciata* p. 42, *nympha* var. *uralica* p. 43, *nympha* var. *pseudolivonica* p. 44, *strajeskiana* p. 45, all figd., **Khodalevich**, et al.; ex gr. *pleurodon* ? p. 154, figd., **Dedeer & Lapina**.

†“*Camarotoechia*” *aequicostata* p. 308, *sinuosa* p. 309, both figd., **Boucot**.

†*Caryorhynchus hippocastanea* sp. nov. p. 13, figd., Middle Devonian, Canada, **Crickmay**.

†*Costellirostra* sp. p. 47, figd., **Boucot & Arndt**.

Cyclothyrisinae subfam. nov. p. 82, Mesozoic, **Makridin**.

†*Decoropugnax* gen. nov., type species: *Terebratula berenice* **Barrande**, 1847, p. 244, Silurian, Czechoslovakia, **Havlíček** (1).

†*Fascicosta* gen. nov., type species: *Rhynchonella* ? *longaeva* **Girty** p. 71, figd., Permian (Wordian-Capitanian), U.S.A., **Stehli**.

†*Halorella amphitoma* (**Bronn**)=type species of *Halorella* **Bittner** p. 158, **Ager**.

†*Halorelloidea* gen. nov., type species *Halorella rectifrons* **Bittner**, 1890, p. 159, Alpine Trias, Austria, **Ager**.

Hebetoecchiidae fam. nov. for †*Lanceomyonia* gen. nov., type species *Terebratula tarda* **Barrande**, 1847, p. 243., Silurian, Czechoslovakia, **Havlíček** (1).

†*Hircinioca* gen. nov., type species: *Atrypa hircina* **Barrande**, 1879, p. 241, Silurian, Czechoslovakia, **Havlíček** (1).

†*Hypothyridina alata* p. 49, *alata* var. *fainecostata* var. nov. p. 50, both figd., Eifelian, Urals, **Khodalevich**, et al.

†*Isjuminella* gen. nov. = *Isjuminelina* 1960. p. 85, type species: *Rhynchonella decorata* **Buch**, 1830-31, Lusitanian, U.S.S.R., **Makridin**.

†*Ivanoviella* gen. nov. p. 83, type species: *Rhynchonella alemanica* **Rollier**, 1917, figd., Lower Callovian, U.S.S.R., **Makridin**.

†*Lacunosella cracoviensis* p. 405, figd., *trilobataeformis* p. 404, **Malinowska**.

†*Lamellaerhynchia caseyi* p. 252, *larwoodi* p. 253 spp. nov. figd. Lr. Cretaceous, Ur. Aptian, England, **Owen**.

†*Latonotoechia* gen. nov., type species: *Terebratula latona* **Barrande**, 1847, p. 244, Lower Devonian, Czechoslovakia, **Havlíček** (1).

†*Linguopugnoides* gen. nov. type species: *Rhynchonella nympha carens* **Barrande**, 1879, p. 242, Silurian, Czechoslovakia, **Havlíček** (1).

Monatotoechia gen. nov. see *Septalariidae* fam. nov.

†*Mosquella* gen. nov. p. 86, type species: *Rhynchonella zoyoptycha* **Fischer de Waldheim**, 1843, Jurassic, U.S.S.R., **Makridin**.

†*Norella bittneri* sp. nov. p. 160, Alpine Lias, Austria, **Ager**.

†*Orbiryhynchia parkinsoni* sp. nov. p. 250, figd. Lr. Cretaceous, Ur. Albian, Cambridge. [= "*Rhynchonella* " *sulcata* (Parkinson) of authors], Owen.

†*Paraphorhynchus medialis* p. 322, *striatus* p. 327, *girtyi* 331, *casteri* sp. nov. p. 334, all figd., Lr. Carboniferous, U.S.A., **Sass**.

†*Peregrinella multicarinata* p. 707, **Biernat**.

†*Phoenicitechia* gen. nov., type species: *Rhynchonella phoeniz* Barrande, 1847, p. 242, Lower Devonian, Czechoslovakia, **Havlicek** (1).

†*Phragmophora schnuri* p. 706, **Biernat**.

†*Piarorhynchia juvenis* p. 29, Lower Lias, Dorset and Glamorgan, **Hallam**.

†*Praecyclothyris* gen. nov. p. 87, type species: *Rhynchonella moeschi donetziana* Makridin, 1952, Lusitanian, U.S.S.R., **Makridin**.

Pseudopugnaxinae subfam. nov. p. 248 for *Pseudopugnax*, † *Donella*, † *Monticarella*, **Licharew** in **Sarycheva**, et al.

†*Pugnax pugnax* p. 406, *pseudopugnax* p. 412, *acuminatus* p. 414, **Parkinson**; aff. *voroni* p. 48, figd., **Khodalevich**, et al.

†*Pugnoides bisulcatus* p. 292, figd., **Coogan**.

†*Rhynchonella* cf. *cartieri* p. 458, *latifrons* figd., *plicatissima* var. *rectimarginata* p. 459, *variabilis* p. 460, figd., Lias, Italy., **Pozzi**; *loziae* = correct spelling for type species of *Rhynchonella* Fischer previously recorded as *R. lozia*, p. 160, **Ager**; *quadruplicata* p. 168, figd., **Sudic**; *refractifrons* Bittner, 1890 = type species of *Norella* Bittner, 1890, p. 159, Alpine Trias, Austria, **Ager**.

Rhynchonellinae subfam. nov. p. 88, Triassic—Recent, **Makridin**.

Rhynchotetradidae fam. nov. p. 249 for *Goniophoria*, *Yanischevskyella*, *Rhynchotetra*, *Aziodeanceia*, **Licharew** in **Sarycheva**, et al.

†*Septalaria* (?) *transuralica* p. 51, (?) *transuralica* var. *micula* var. nov. p. 52 both figd., Eifelian, Urals, **Khodalevich**, et al.

Septalariidae fam. nov. for †*Amissopecten* gen. nov., type species *Terebratula veloz* Barrande, 1847, and †*Monadotoechia* gen. nov., type species *Rhynchonella monas* both p. 243, Devonian, Czechoslovakia, **Havlicek** (1).

†*Septaliphoria arduenensis* p. 88, **Makridin**.

†*Septocamera chatyrkensis* sp. nov. p. 25, figd., **Gholubkov**.

†*Streptaria arabica* sp. nov. p. 152, figd., Eocene, Arabia, **Elliot**.

Tegulorhynchia nigricans p. 439, Recent, New Zealand, **Percival**.

†*Terebratuloidea triplicata* p. 109, figd., **Volgin** (1).

Tetracameridae fam. nov. p. 249 for *Rotaia*, *Septocamera*, *Tetracamera*, *Nantanella*, **Licharew** in **Sarycheva**, et al.

†*Uncinunellina ferganica* sp. nov. p. 115, figd., Ur. Carboniferous—Lr. Permian, U.S.S.R., **Volgin**; *ferganica* p. 109, figd., **Volgin** (1).

†*Uncinulus orbignyanus*, *pilus* figd. pl. 1., **Sitter & Zwart**.

Wellerellidae fam. nov. for *Wellerellinae* subfam. nov. p. 247, for *Wellerella*, *Denticuliphoria*, *Euxinella*, *Robinsonella*, *Leiorhynchoidea*, *Hyborhynchella*, *Fascicosta*, **Lecharew** in **Sarycheva**, et al.

†*Wilsonella princeps* p. 46, *knjaspensis* p. 47, figd., **Khodalevich**, et al.

STENOCISMATACEA

†*Stenosisma* cf. *kochi* s. *plicatum* p. 62, both figd., **Harker**; *latissima* p. 111, *nucula triangula* p. 113, *tschernyschewi* p. 114, all figd., **Volgin** (1); *nucula triangula* subsp. nov. p. 117, Lower Permian, *S. tschernyschewi* sp. nov. p. 118 Ur. Carboniferous to Lr. Permian, both figured, **Volgin**; *venusta* p. 293, figd., **Coogan**.

RHYNCHOPORACEA

†*Rhynchopora* cf. *nikitini* p. 28, **Gholubkov**; cf. *nikitini* p. 63, figd., **Harker**; *taylori* p. 293, figd., **Coogan**.

Suborder ATRYPOIDEA

ATRYPACEA

†*Atrypa aperanta* sp. nov., *arctica* p. 15, both figd., Middle Devonian, Canada, **Crickmay**; *devoniana* var. *matutinalis*, *devoniana* var. *descreens* p. 53, *spinosaeformis*, *flabellata* p. 54, *scaberbra* p. 55 all figd., **Khodalevich**, et al.; *gedinniana* p. 310, figd., **Boucot**; *lazutkini* sp. nov. p. 67, figd., Silurian, U.S.S.R., **Alekseeva** (1); "*reticularis*" p. 48, figd., **Boucot & Arndt**.

†*Carinatina arimaspa* p. 60, *arimaspa* var. *symmatica* var. nov. p. 61, *arimaspa* var. *minor* p. 62, *signifera* var. *localis* p. 63, *padozoa* p. 64, all figd., Eifelian, Urals, **Khodalevich**.

†*Coelospira* sp. p. 11, figd., **Boucot** (2).

†*Dentatrypa* gen. nov. p. 57, type species: *Atrypa kolymensis* Nalivkin, 1935 p. 58, *kolymensis* var. *intermediafera* p. 59 all figd., Eifelian, Urals, **Khodalevich**, et al.

†*Plectatrypa* (?) *carpuleta* sp. nov. p. 65, figd., Eifelian, Urals, **Khodalevich**, et al.

†*Punctatrypa fossa* sp. nov. p. 56, figd., Eifelian, Urals, **Khodalevich**, et al.

Punctatrypinae subfam. nov. p. 262 for *Punctatrypa*, † *Atrypinella*, **Rzonsnickaja** in **Sarycheva**, et al.

†*Spinatrypa dyemorphostota* sp. nov. p. 13, figd., *coriacea* sp. nov. p. 14, figd., Middle Devonian, Canada, **Crickmay**.

†*Spirigerina marginaliformis* sp. nov. p. 65, figd., Silurian, U.S.S.R., **Alekseeva** (2).

Vagrana gen. nov., type species: *Atrypa kolymensis* Nalivkin, 1936, p. 598, figd., Devonian, Urals, U.S.S.R., Alekseeva.

Suborder SPIRIFEROIDEA

SPIRIFERACEA

†*Ambocoelia urei* p. 118, *parva* p. 118, *unionensis* p. 120, figd., Balashova; *urei* p. 357, Zakova.

†*Brachyspirifer* cf. *perimele* p. 48, figd., Boucot & Arndt.

†*Brachythyris carinca* p. 120, *grandis* p. 122, aff. *shansiensis* p. 125, *quadriradiatus* p. 126, all figd., Volgin (1).

†*Brachythyris peculiaris* p. 104, *peculiaris* var. *latiangularata* var. nov., *suborbicularis* p. 105, *suborbicularis* var. *tenuicostata* p. 106, *tenuiplicatus* sp. nov. p. 107, *eximius* p. 108, all figd., Lower Carboniferous, U.S.S.R., Balashova; cf. *suborbicularis* p. 158, figd., Dedeev & Lapina; ex. gr. *ovalis*, *quadriradiatus* p. 26, both figd., Gholubkov; *ovalis* p. 406, Parkinson; (?) *talicensis* sp. nov. p. 67, figd., Eifelian, Urals, Khodalevich, et al.

†*Choristites gusanicus* sp. nov. p. 119, figd., Ur. Carboniferous, U.S.S.R., Volgin; *fritschii ferganicus* p. 128, *pavlovi* p. 130, *pavlovi taiyuanensis* p. 133, (?) *volgensis* p. 135, *gusanicus* p. 136 all figd., Volgin (1).

†*Crurithyris* cf. *guadalupensis* p. 296, figd., Coogan.

†*Delthyris dumontianus* p. 315, figd., Boucot.

†*Eomartiniopsis* ? *tischerepeti* p. 117, figd., Balashova.

†*Eospirifer karmanovi* var. *instabilis* var. nov. p. 66, figd., Eifelian, Urals, Khodalevich, et al.

†*Euryspirifer* cf. *atlanticus* p. 48 figd., Boucot & Arndt.

†*Homevalia pelicanensis* sp. nov. p. 1119, figd., Permian, Australia, Campbell.

†*Hovellia mercuri* p. 313, figd., Boucot; sp. p. 8, figd., Boucot (2).

†*Ingelarella plana* p. 1112, *plica* p. 114, *ingelarensis* p. 1115, *magna* p. 1117, *mantuanensis* p. 1118, spp. nov. all figd., *havlensis* Isbell MS. p. 1120, figd., Permian, Australia, Campbell.

†*Ilmenia waganovi* sp. nov. p. 68, figd., Eifelian, Urals, Khodalevich, et al.

†*Licharewia stuckenbergi* p. 45, *regulata* p. 51, *grevingki* p. 55, *schrenckii* p. 58, *latiareata* p. 61, all figd., Sluisareva; *stuckenbergi* p. 45, figd., Sluisareva.

†*Martinia karawanica* sp. nov. p. 121, figd., Ur. Carboniferous, U.S.S.R., Volgin; *karawanica pusilla* p. 8, *semiconveza* p. 140, *incerta* p. 141, all figd., Volgin (1); *raguschensis*, *glabra*, p. 159, figd., Dedeev & Lapina.

†*Martinia* (*Martiniella*?) *rhomboidalis* p. 116, figd., Balashova.

†*Martinia* (*Pseudomartina*) *uralica* p. 27, figd., Gholubkov.

†*Mentzelia ampla* p. 63, *microglossa* p. 64, *mentzelii* var. *dinarica*, *palaeotypus* p. 66, all figd., Pantić.

†*Neophricodothyris rostrata* p. 142, figd., Volgin (1).

†*Neospirifer cameratus* p. 714, figd., Hoare & Burgess; *grunewaldianus* p. 157, figd., Dedeev & Lapina; cf. *tezanus* p. 294, figd., Coogan.

†*Notospirifer minutus* sp. nov. N. sp. p. 1121, figd., Permian, Australia, Campbell.

†*Nuguschella* gen. nov. p. 408, type species: *N. polita* sp. nov. p. 408, Middle Devonian, Southern Urals, Tjasheva.

†*Permospirifer keyserlingi* p. 67, *kulikovii* sp. nov. p. 71, both figd., Permian, U.S.S.R., Sluisareva.

†*Phricodothyris perpleza* ? p. 714, figd., Hoare & Burgess.

†*Prospira typa* var. *telebangensis* p. 8, figd., Lower Carboniferous, Australia, Maxwell.

†*Pterospirifer* cf. *alatus* p. 68, P. ? sp. A, both figd., Harker.

†*Reticularia* (*Phricodothyris*) *reticulata* p. 108, figd., Balashova.

†*Reticularia* (*Squamularia*) *cooperensis* p. 109, (St) *lesnikovae* sp. nov. p. 111, figd., Lr. Carboniferous, U.S.S.R., Balashova.

†*Spirifer acutisimilis* p. 321, figd., Gunia & Görecka; *dolgensis* p. 114, *tegulatus* p. 117, both figd., Volgin (1); *grimesi* p. 51, figd., Early Mississippian, Oklahoma, Huffman & Starke; *occiduous* nom. nov. for *Spirifer occidentalis* (Girty, 1927). Lr. Pennsylvanian, U.S.A., Sadlick; *optimus* p. 713, figd., Hoare & Burgess; *osborni* sp. nov. p. 65, *S. striato-paradoxus* p. 67, both figd., Permian, Canada, Harker; *verneuili*, *berberine* figd., Permian, Canada, Harker; *verneuili*, *berberinensis*, *bouchardi*, *cultrijugatus*, *rojasi* pellico all figd. pl. 1., Sitter & Zwart; (*Spirifer*) *platynotus* p. 85, *tornacensis* p. 86, *ventricosus*, *pentagonus* *pentagonus* var. *curtclauda* p. 91, *ussienensis*, *plicatilis* p. 93, *gregeri*, *planatus* p. 94, *subrotundus* p. 95, *rostellatus* p. 96, *attenuatus* p. 97 (*Spirifer*) *suavis* p. 100, *cinctus* p. 101, *djanganensis* p. 102, all figd., Balashova; *triangularis* p. 154, *sibileii* sp. nov. p. 155, S. sp. p. 157, all figd., Lr. Carboniferous, U.S.S.R., Dedeev & Lapina.

†“*Spirifer*” cf. *bischoffi* fig. pl. 68, Boucot (1).

†*Spirifer* (*Lamellispirifer*) *tylothyrisformis* var. *multi-striata* p. 84, *roemerianus* p. 85, figd., Balashova.

†*Spirifer* (*Paulonia*) *ranovensis* p. 83, figd., Balashova.

†*Spiriferella asiatica* sp. nov. p. 120, figd., Ur. Carboniferous, U.S.S.R., Volgin; *asiatica* p. 137, figd., Volgin (1); aff. *polaris* p. 294, figd., Coogan; *saranae* sens. lat. p. 71, *S. keithavii* sens. lat. p. 72, figd., Harker.

Spinocyrtinae subfam. nov. p. 267 for *Tannuspirifer*, *Spinocyrtia*, *Mucrospirifer*, *Brevispirifer*, *Eosyringothyris*, *Maispirifer*, ? *Dimegelasma*, Ivanova in Sarycheva, et al.

†*Squamularia asiatica* p. 64, figd., Harker.

†*Tomiopsis* gen. nov. p. 169, type species: *Brachythyrus kumpiani* Janischewsky, 1935, figd., Lower Viséan—Namurian, Benediktova.

†*Tannuspirifer* gen. nov. type species: *Spirifer pedaschenkoii* Tchernyshev, 1937, p. 267, figd., Silurian, U.S.S.R., Ivanova in Sarycheva, et al.

†*Urella* gen. nov. p. 402, type species: *Urella asiatica* sp. nov. p. 403, Middle Devonian, U.S.S.R., Rzhonsnitskaya.

†*Warrenella timetea* p. 16, *labrecquei* p. 17, spp. nov. both figd., Middle Devonian, Canada, Crickmay.

†† *Ziganella* gen. nov., type species: *Z. ziganensis* in coll. Nalivkin p. 280, figd., Lr. Carboniferous, U.S.S.R., Nalivkin in Sarycheva, et al.

PUNCTOSPIRACEA

†*Callispirina* ? *laza* p. 296, figd., Coogan.

†*Cyrtina lapidea* sp. nov. p. 214, Ur. Devonian, Canada, Pedder; *utrimquesulcata* p. 316, figd., Boucot; ? sp. p. 9, figd., Boucot (2).

†*Punctospirifer multicostatus* p. 322, Gunia & Görecka; *partitus* p. 114, figd., Balashova;

†*Spiriferellina bayvullensis* sp. nov. p. 7, figd., Lower Carboniferous, Tournaisian, Australia, Maxwell.

†*Spiriferina hirsuta* p. 67, *avarica* p. 68, *tommassii*, *mentzelii* p. 69, *mentzelii* var. *sinuosa* p. 70, all figd., Pantić; *pinguis*, *valcotti* p. 29, Lower Lias, Dorest and Glamorgan, Hallam.

†*Syringothyris hannibalensis* p. 112, *serenae* p. 113, figd., Balashova; *angulata* p. 350, *randalli* p. 355, both figd., Lr. Carboniferous, U.S.A., Sass.

ATHYRACEA

Athyris ambigua p. 361, figd., Zakowa; *dedeevi* sp. nov. p. 161, figd., Lapina in Dedeev & Lapina; *royssii* p. 322, Gunia & Görecka.

†*Anathyris ezquerrii* figd. pl. 1, Sitter & Zwart.

†*Cleiothyridina* cf. *subexpansa* p. 73, figd., Harker.

†*Composita* cf. *grandis* p. 296, Coogan; *tetralobata* sp. nov. p. 229, figd., Pennsylvanian, Missouri, U.S.A., Hoare; *trinuclea* p. 160, figd., Dedeev & Lapina; sp. p. 714, Hoare & Burgess.

†*Homeospira gdoumontensis* p. 317, figd., Boucot.

†*Hustedia mormoni* p. 144, figd., Volgin (1).

†*Merista pinguicula* sp. nov. p. 73, figd., Eifelian, Urals, Khodalevich, et al.

†*Meristella* (?) *rostellata* sp. nov. p. 70, *tchernyshevii* var. *perfaceta* var. nov. p. 71 both figd., Eifelian, Urals, Khodalevich, et al.; ? sp. p. 311, figd., Boucot.

†*Protathyris* ? *straeleni* p. 312, figd., Boucot; sp. p. 10, figd., Boucot (2).

†*Trigleria adrieni* pl. 1, figd., Sitter & Zwart.

†*Tetractinella trigonella* p. 60, figd., Pantić.

Suborder TEREBRATULOIDEA

TEREBRATULACEA

†*Amphigenia* cf. *parva* p. 49, fig., Boucot & Arndt.

†*Balanococoncha australis* sp. nov. p. 5, figd. (serial section p. 6), Lower Carboniferous, Tournaisian, Australia, Maxwell.

†*Biarea* gen. nov. p. 75, type species: *B. sinuata* sp. nov. p. 76, figd., Eifelian, Urals, Khodalevich, et al.

†*Carneithyrus gracilis* p. 16, *carnea* p. 17, figd., Sahni.

†*Chatwinothyris subcardinalis* Spicule pattern observed in moulds inside flint nodules, Steinich; *subcardinalis* p. 16, figd., Sahni.

†*Coenothyris vulgaris* p. 71, figd., Pantić.

†*Concinnithyrus subundata* p. 4, C. ? sp. indet. p. 5, *albensis* p. 7, *albensis* var. *latifrons* p. 8, *albensis* var. *minor*, aff. *albensis* p. 9, *protobesa* p. 10., all figd., Sahni.

†*Cryptonella* (?) *assueta* p. 74, *schegultanica* p. 75 spp. nov. figd., Eifelian, Urals, Khodalevich, et al.

†*Dielasma hastata* p. 427, Parkinson; cf. *plica* p. 74, figd., Harker; *pulgonica* sp. nov. p. 122, figd., Ur. Carboniferous, U.S.S.R., Volgin; *pulgonica*, *plica* p. 146, both figd., Volgin (1); *woehrmannianum* p. 305, figd., Trias, Italy, Desio, Rossi Ronchetti & Viganò.

†*Enantiosphen librovitschi* p. 50, figd., *vodorezovi* sp. nov. p. 51, figd., Middle Devonian, U.S.S.R., Rozman.

†*Geranocephalus inopinus* p. 882, Crickmay (1).

†*Gibbithyrus grandis*, *grandis* var. *nana* p. 11, *media*, *ellipticoidalis* p. 12, *ellipticoidalis* var. *quidhamptonensis* var. nov., *gibba* p. 13, *subrotunda* p. 14, *semiglobosa* p. 14, all figd., Ur. Chalk, U.K., Sahni.

†*Jaisalmeria taylori* p. 423, *depressa* p. 424, *ovalis* p. 425, *ovalis* var. *cuneata*, *kitchini*, *inflata* p. 427, Sahni & Bhatnagar.

†*Kutchithyrus* ? *jaisalmerensis* p. 429, Sahni & Bhatnagar.

Labaidae fam. nov. p. 293, for *Labaid*, *Pseudodielasma*, ? *Oligothyridina*, Lr. Carboniferous—Permian, Licharew in Sarycheva et al.

†*Meganteris* sp. figd. pl. 68., Boucot (1).

†*Mutationella barroisi* p. 318, figd., Boucot.

†*Neokiothyridina obesa* p. 18, figd., Sahni.

†*Notothyris nucleolus* p. 148, figd., Volgin (1).

Notothyridinae subfam. nov. p. 288 for *Notothyris*, Permian, Caucasus, U.S.S.R., Licharew in Sarycheva et al.

†*Ornatothyris sulcifera* p. 19, figd., Sahni.

†*Podolella* sp. p. 320, figd., Boucot.

†*Postepithyrus* gen. nov. type species *Terebratula cincta* Cotteau, 1857, p. 294, figd., Ur. Oxfordian—Lr. Kimmeridgian, U.S.S.R., Makridin in Sarycheva, et al.

†*Prionothis* ? sp. p. 49, figd., Boucot & Arndt.

"*Rensselaeria elongata*" p. 74, figd., Amsden & Huffman.

†*Rouillieria* gen. nov. type species: *Terebratula michalkowii* Fahrenkohl, 1885-56, Ur. Jurassic—Lr. Valanginian, Makridin in Sarycheva, et al.

†*Stringocephalus glaphyrus, sapiens* p. 882, *chasmognathus* p. 885, spp. nov., *axius* p. 887 all figd., Middle Devonian, Canada, Crickmay (1).

†*Terebratula ampulla* p. 70, Zbyszewski; *bukowskii, kistlii* p. 61, both figd., Pantić; *globata*, p. 168, T. cf. *trilineata* p. 169, *ventricosa* p. 169, *perovalis, marillata* p. 170, all figd., Sudić.

"*Terebratula*" *pumilo*—larval swimming form of *Stringocephalus* from the Middle Devonian, West Germany, Schmidt.

†*Terebratula* (? *Concinnithyris*) *rowei* sp. nov. p. 5 figd., Ur. Chalk, U.K., Sahni.

†*Terebratula* (*Sphaeroidothyris*) *lenthayensis* p. 171, figd., Sudić.

Terebratulina squamulosa p. 296, Eocene, English Channel, U.K., Curry.

Terebratulina (Eucalathis) moreletti Eocene, English Channel, U.K., Curry.

†*Uralella* gen. nov., type species: *Terebratula stroganoffii* d'Orbigny, 1845, p. 295, figd., Ur. Jurassic, Southern Urals, Eastern Siberia and Arctic, Makridin in Sarycheva, et al.

Suborder TEREBRATELLOIDEA

TEREBRATELLACEA

Argyrotheca cordata p. 461, Recent, English Channel, Atkins (2); *decemcostata* p. 296, Eocene, English Channel, U.K., Curry; *zenobiae* sp. nov. p. 153, figd., Miocene, Syria, Elliott.

†*Australiarcula* gen. nov., type species *A. artesiana* sp. nov. p. 26, figd., Lower Albian, S. Australia, Elliott (1).

†*Belothyris* gen. nov. p. 117, type species: *Belothyris plana* sp. nov. p. 118, *regularis* p. 118, *convexa* p. 119 spp. nov. all figd., Lower Cretaceous, North Caucasus, U.S.S.R., Smirnova.

Belothyrinae subfam. nov. p. 115, for *Belothyris*, Lr. Cretaceous, North Caucasus, U.S.S.R., Smirnova.

Dallina septigera p. 91, figd., Atkins (1).

Fallax gen. nov., type species: *F. dalliniiformis* sp. nov. p. 72, figd., Recent, Western Approaches, Atkins.

Frenulina sanguinolenta p. 171, Recent, Japan, Mano.

Laqueus californianus p. 96, *vancouveriensis diegensis* p. 97, Hertlein & Grant.

Megathyris detruncata p. 463, Recent, Atkins (2).

Megerlia truncata p. 154, figd., Pliocene, Syria, Elliott.

Mühlfeldtia truncata p. 612, figd., Dieni & Omenetto.

Terebratalia arnoldi p. 92, *hemphilli* p. 93, *occidentalis* p. 94 all figd., Hertlein & Grant; *transversa* p. 18, Pleistocene, California, Kanakoff & Emerson.

†*Trigonosemus pulchellus*, Growth stages observed, Steinich.

†*Waldheimia angustaeformis* p. 62, Pantić.

†*Zeilleria* cf. *humeralis* p. 405, Malinowska; *perforata* p. 29, Lower Lias, Dorset and Glamorgan, Hallam.

The following Orders were proposed in the Russian Treatise, OCHÖBBI ПЯЧЕОНОТОЧОГИИ ОСНОВY PALEONTOLOGII published in Moscow, 1960.

INARTICULATA

RUSTELLIDA for Rustellacea.

LINGULIDA for Obolacea, Lingulacea, Trimerellacea.

CRANIIDA for Craniacea.

ACROTRETIDA for Acrotretacea, Discinacea.

SIPHONOTRETIDA for Obolellacea, Siphonotretacea.

KUTORGINIDA for Paterinacea (Dictyoninacea), Kutorginacea.

ARTICULATA

ORTHIDA for Orthacea, Rhipidomellacea (Dallmanellacea), Enteletacea, Clitambonitacea.

PENTAMERIDA for Forambonitacea, Camerellacea, Pentameracea.

STROPHOMENIDA for Plectambonitacea, Strophomenacea, Stropheodontacea, Orthotetacea.

PRODUCTIDA for Chonetacea, Productacea, Lytoniacea.

RHYNCHONELLIDA for Rhynchonellacea, Rhynchoporacea.

ATREPIDA for Cyclospiracea, Atrypacea, Coelospiracea, Dayiacea.

SPIRIFERIDA for Spiriferacea, Delthyriacea, Spiriferinacea, Athyracea.

TEREBRATULIDA for Terebratulacea, Terebratulacea, Thecidacea.

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